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ABSTRACT

The Institute on the Automation of Bibliographical Services was held at the University of Maryland, 10-21 June 1968, conducted by the School of Library and Information Services, assisted by the Library of Congress Information Systems Office and the University Computer Science Center. Thirty-nine participants from academic, special, and public library systems attended and were taught by a staff drawn from the University faculty and from libraries cooperating in the MARC experiment. The Institute program consisted of lectures, seminar discussion and practical exercises in two laboratory sessions; one on the preparation of bibliographic data for input into the computer, demonstrating the conversion of information to paper tape; the other on computer manipulation of MARC tapes for various purposes. Participants in the Institute stated that exposure to the first hand detail and experience of the MARC experiment had given them a very real understanding of the problems and processes of library automation. Many were confirmed in the acceptance of the Library of Congress tapes as a basis for future operation. (Institute materials are presented in the appendixes.) (Author/SL)

ED 088480

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NARRATIVE EVALUATION REPORT
ON THE INSTITUTE FOR: THE AUTOMATION OF BIBLIOGRAPHICAL SERVICES

AT: SCHOOL OF LIBRARY AND INFORMATION SERVICES, UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND 20742

DATES: 10-21 JUNE 1968

SUBMITTED BY: C. D. BATTY, Director of the Institute and
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IR 000 313

INTRODUCTION

The Institute on the Automation of Bibliographical Services was held at the University of Maryland 10-21 June 1968, conducted by the School of Library and Information Services, assisted by the Library of Congress Information Systems Office and the University of Maryland Computer Science Center. Thirty-nine participants from academic, special and public library systems attended and were taught by a staff drawn from the university faculty and from libraries cooperating in the MARC experiment. Further details can be found in the Institute's Program (Appendix A).

RELATIONS WITH U. S. OFFICE OF EDUCATION

The spirit of relations with the USOE was at all times entirely satisfactory and the advice and assistance received materially aided the preparation and conduct of the Institute. Some concern was felt, however, at the timing of certain stages of preparation; the Proposal for the Institute was submitted in December 1967 and preliminary agreement to proceed was received in February 1968. Since the Institute was to be held in June 1968, a final date of April 15 was set for the receipt of applications and it was hoped at that time to be able to inform successful applicants of details of the program, but negotiations on the contract had hardly begun at that time, and were protracted, through inevitable delays involving discussion with the University Administration as well as USOE, until May. Pressure on USOE finance then delayed the final agreement on the Plan of Operation and the revised budget, until the Institute began, with the result that the University had already committed itself financially beyond the sum already advanced by USOE.

It should be emphasized that much of the consequent strain on the preparation of the Institute was alleviated by the helpful comments and advice of USOE staff, but it should be noted for the future that the timetable for negotiation should be much advanced, aiming at final agreement no later than a date mid-way between the submission of the Proposal and the start of the Institute.

RELATIONS WITH THE UNIVERSITY ADMINISTRATION

In many ways individual offices in the University Administration contributed greatly to the successful preparation of the Institute, in particular the Contracts and Grants Office, and it would profit little to detail difficulties or problems inevitably encountered in the attempt to match the requirements and timing of the Institute with the machinery of a large and complex University.

Such difficulties and problems as did arise seemed to be rooted in a fundamental uncertainty of policy that might benefit from scrutiny. The University holds money from the USOE for running an Institute, and any secretarial and administrative staff must be employed through the University. Clearly neither money nor staff can be diverted to any other purpose, but the imposition of standard University administrative routines can mean delays in payment of bills and limitations on spending in certain areas even though sums have been agreed with the USOE, because the University treats the preparation of the Institute as an internal matter, subject to the budgetary controls consequent on its own financial position. It would be useful for future Institutes if the USOE could clarify the functional responsibility and power of the Director when handling Institute funds and arrangements.

PRE-INSTITUTE PREPARATION

Publicity

As soon as permission was given by USOE to go ahead with the preparation of the Institute a previously prepared Press Release (Appendix B)was sent to 150 professional journals and associations in the U.S. and overseas and selected media offices to secure early wide distribution of the news of the Institute. At the same time the University Press printed the preliminary Announcement Brochure (Appendi C). This was sent to all public and academic libraries in the country of a size large enough to suggest a potential interest in the content and direction of the Institute. It was also sent to all State Libraries and to selected special libraries, library schools and research organizations. Professional journals, state and national library associations and media offices received it as an automatic follow-up to the Press Release. Professional journals and associations and selected libraries abroad also received copies of the Announcement Brochure. At the same time the Library of Congress published news of the Institute in its Bulletin.

A number of late applications made reference to the fact that the candidates had only just seen announcements in the professional journals, and some comments implied that there had been insufficient coverage. Two reasons might be offered: that many librarians read only one or two journals regularly, and that not all journals respond to press releases. It was observed in this case that major journals had carried news of the Institute on receipt of the Press Release, but that there were exceptions and these did not respond to the follow-up of the Announcement Brochure. It is difficult to see to what extent a Director can profitably pursue journals that do not print a press release, and it is suggested that coverage by direct mailing to libraries is probably more effective. More effective still is the attendance of a Director at a national conference, since personal publicity can be very immediate. It might be worth considering a travel allowance in an Institute budget for this purpose.

Selection Criteria and Methods

The Planning Committee and the Director agreed initially that the Institute should be directed towards senior librarians involved in systems design and operation in large libraries. The most important criterion was direct involvement with technical and bibliographical processes at the policy or control level and two kinds of candidate were given preference, each of whom had to have graduate training and experience in their particular field; librarians experienced in technical processing who were now involved in automation, and systems analysts and computer scientists who were now working in library contexts. The selection was done by the Director and members of the Planning Committee.

Approximately 607 Announcement Brochures with application forms were mailed out either spontaneously or in response to inquiries after the press release. 125 applications were received and of these forty participants were selected, a reserve list was drawn up of 9 candidates who might replace participants who withdrew, and 76 applicants were turned down. By the time the Institute began 5 of the originally selected participants had withdrawn and had been replaced by candidates from the

reserve list. On the first day of the Institute one further participant withdrew, and since it was then too late to add a name from the reserve list, the Institute was conducted with thirty-nine participants.

It should be added that although the selection had been done at long-range with no opportunity for personal interview, the participants seemed without exception to be of an appropriate calibre and ability both to respond and contribute to Institute activities. In only one respect did the USOE recommended application form fall short of our requirements; it did not require a subjective evaluation by the candidate of his or her fitness and need to attend the Institute. This omission was remedied on our own application form and the answers proved very helpful, as much in manner and style as in content.

ORIENTATION OF PARTICIPANTS

Participants had already been told the scope, level and direction of the Institute in the Announcement Brochure. When the final arrangements had been made as far as possible a packet of preliminary materials was mailed to each participant containing a preliminary reading list (Appendix D), a draft program, later superseded and confirmed by the official program (Appendix A) details of domestic and financial matters, and details of transport and other local facilities.

When the participants registered at the Institute each was given a packet of materia containing in addition to further domestic and local detail, and essential stationery, etc., a full Program of the Institute (Appendix A) a Select Bibliography (Appendix E) a published report on the second and latest stage of the MARC Project (Appendix F) an instruction booklet on the preparation of cataloging data for machine input (Appendix G) and data input worksheets (Appendix H).

Final orientation and briefing was given by the Director in the Introduction to the Institute.

PHYSICAL FACILITIES, PRACTICAL LABORATORY WORK AND FIELD TRIPS

The Institute program used three modes of instruction: expository lectures; seminar discussion; and practical demonstration and operation.

Expository lectures

Lectures were held in one of the university's small lecture theatres, equipped for film and slide projection, sound recording and amplification and the use of audio-visual aids. The room was good enough acoustically to allow not only question and answer sessions but also discussion among the participants and with the lecturer. At one time or another every audio-visual medium was employed.

Seminar discussion

The participants were divided into five groups (Appendix I) for seminar discussion. Seminar rooms were made available for them to use at any time at the discretion of convenors; outside the hours when the university buildings

were open, seminar groups met in rooms in the motel. Secretarial and copying facilities were made available to all groups for reproduction and dissemination of memoranda and reports.

Practical demonstration and experience

Two lab sessions were held. One on the preparation of bibliographic data for input to the computer used equipment used by the Library of Congress Information Systems Office to demonstrate the conversion of information on pro forma sheets to paper tape. The other on computer manipulation of MARC tapes for various purposes used an IBM 1401 installation in the University's Computer Science Center. The Center offered very practical help and assistance, especially in making their facilities available on the weekend before the laboratory session for the Director, and the computer operator to try out the demonstration programs.

Field trips

Two trips were organized: one to the Information Systems Office in the Library of Congress and one to Documentation Incorporated, where work is going on in the field of information retrieval by computer and the production of book catalogs using computers and photo-typesetting.

PARTICIPANT COMMUNICATIONS

Communications and relations between the Director and Staff and the participants was based on the policy of conducting the Institute as a Study Conference. The group of participants was small, expert and responsible and it was felt appropriate and productive to encourage an atmosphere of cooperation. The Director was available at all times for consultation on any matter to do with the Institute, and the Staff of the Institute undertook to handle their own areas as participants' questions arose. The method worked extremely well, and it was one of the points commented on favorably by participants.

More formal communication was conducted as back-up by having a bulletin board for official announcements with a section for inter-participant communication on such matters as the organization of seminar group meetings.

STAFF

There were two kinds of lecturing staff: full-time and adjunct teaching members of the regular faculty of the University of Maryland School of Library and Information Services, and visiting lecturers (mostly practicing librarians) from the Library of Congress Information Systems Office and from libraries cooperating in the MARC experiment. Predictably the practicing librarians had interesting new data to present and almost without exception they presented it well and effectively, but it was noticeable that regular teaching faculty had more experience at delivery and particularly at organized discussion. While it is inevitable and essential at Institutes (which are special by their very nature and function) to have specialist

lecturers, the judgment cannot be avoided that experienced lecturers, even though they may be communicating at second hand, are often better at maintaining the interest and response of their audience.

MATERIALS AND MODES OF INSTRUCTION

Most audio-visual materials were of a conventional kind: overhead projector and transparencies; 2 x 2 slide projector; flip charts and models, etc.

New to most participants in the Institute was the practical demonstration and experience offered by the facilities of the University Computer Science Center. Participants observed and assisted at a lab session in the running of a number of computer programs actually in use in libraries in various universities to manipulate the MARC data to produce printed order requests catalogs, alloting lists, bibliographic bulletins, etc. Participants saw a full range of computing equipment in use, involving the card reader, tape drive, the computing memory itself and the printer, and key punches, card reproducing punches and interpreters. The value of such a laboratory session is difficult to assess. In such a short time the participants could learn little of the actual operation of the machines, but this does not matter since most librarians would in any case rely on technical operating staff for this. Probably the greatest value was psychological; it brought home the reality of the experience and may well have doubled the impact of all other sessions in the Institute. Practical observation and acquaintance has an effect far beyond its immediate context.

IMPACT OF THE INSTITUTE ON PARTICIPANTS

Almost without exception the participants agreed that the exposure to the first hand detail and experience of the MARC experiment had given them a very real understanding of the problems and the operations of automation in libraries. They pointe in particular to the seminars and to the laboratory sessions that brought alive for them the descriptive accounts that they received in expository lectures. Many had come to the Institute with some idea of recommending the acceptance of the Library of Congress tapes as a basis for future operations, and they were confirmed in their opinions and joined by many other participants. At the same time they all said they realized much more clearly the need for the recognition of goals,of planning and of evaluation before beginning to automate, and several declared their intention of forming interest groups among their local libraries to discuss these matters.

FOLLOW-UP

The Institute was not of a kind where a follow-up would be of value, unless either it were repeated for another similar group, or the same group reconvened in three year's time to discuss their practical progress. However, it is the intention of the School of Library and Information Services to edit and publish the proceedings of the Institute, as a publicly available record of the lectures and discussions.

EVALUATION OF THE INSTITUTE

The major strength of the Institute was its atmosphere, resulting from a common academic and professional level in the participants and the encouragement of a Study Conference attitude. This encouraged in turn a positive and active response by the participants and it was noticeable that, although they took advantage of the proximity of Washington for social relaxation, they also voluntarily held evening working sessions on their own seminar group topics. This spontaneous attitude was endangered by the Institute's only weakness: that as a result of certain University commitments it was impossible to house the participants in the same building where the sessions were held, and there was a slight centrifugal tendency as a result.

In this connection, it is suggested that the policy of the USOE on the conduct of Institutes be revised to allow at least a small sum for hospitality; it is the small touches of this kind that lay a foundation of confidence that results in greater effectiveness. On the whole the timing and duration of the Institute seemed satisfactory, as did the objectives and standards. The effect of the Institute on the academic program of the School was slight, except in an indirect way through the employment of full-time faculty.

CONCLUSIONS

There is no doubt that Institutes of this kind are valuable, and in this particular case served to draw together exposition of and reaction to an important experiment. The reaction of participants to the Institute confirmed the belief of the Director and the staff that their efforts had been worthwhile. It cannot be denied, however, that at times the effort of preparing the Institute seemed to exceed the likely benefits. The major cause of difficulty seemed generally to be the pace of decision and consequent action in both USOE and the University Administration, that frequently lagged dangerously behind the necessary timetable. Such a pace is not necessarily culpable, but inexperienced Directors would be greatly helped by a tentative timetable of decisions so that they may have enough time to make the necessary arrangements. One solution to this general problem is to insist on a greater autonomy for the Director, with a consequently more acute responsibility for failure.

If this Director were to undertake a similar Institute again he would ask for the following improvements:

- More secretarial and administrative assistance.
- Greater independence of authority and responsibility.
- Budget allowances for travel and hospitality.

With these improvements the Institute could have been arranged more easily and more promptly, and the key to its success (all other academic matters being equal) improved immeasurably.

* * *

A WELCOME TO THE INSTITUTE

BY

DEAN PAUL WASSERMAN

Since its inception, the School of Library and Information Services at the University of Maryland has sought to foster the kind of leadership which introduces those being acculturated to practice as well as those already functioning as library professionals to the directions which the field must take in order to further progress and innovation. The curriculum of the School has been structured in such a way as to give important concern to the organization of knowledge and to those elements of advancing technology which afford the prospect of more economic and efficient ways of manipulating information. David Batty, the Director of this Institute, personifies the librarian who bridges from the conceptual base of classification theory across into the realm of machine applications, and we are happy through him and the facilities of this Library School to be able to offer this opportunity here in Maryland to expose these areas. In the present Institute the MARC experience is the case in point; the objective is to expand the horizons of its participants and so ulitmately to influence the forward thrust of library practice. Through such a role, the professional school within the context of the University accepts its legitimate responsibility to comprehend more than just the preparation of new entrants into librarianship, and this in essence is the rationale for the present program.

* * *

INTRODUCTION

Two of the most urgent issues facing librarians today are the sharing of effort in providing cooperative bibliographical services, and the use of automation and electronic data processing to handle the quantity and complexity of information and the information needs of society. Many libraries in the United States have already experimented with or have used EDP equipment, and in the next few years, under the increasing pressures of material and demand, many more must do the same. In order to oversee and design the whole scope of a library's technical and bibliographical services it is essential to have a thorough understanding of the nature, function, operation, problems and implications of automated bibliographical services and it is the intention of this Institute to provide an opportunity for a concentrated pragmatic experience in these areas.

The largest and most intensive exploration of the applications of EDP to library cataloging and bibliographical services at a level and in a context of national and even international significance is the MARC Project of the Library of Congress. It is a full scale experiment in and demonstration of the practicability of the computer preparation and use of Library of Congress catalog records, not only in the Library of Congress itself but also by cooperating libraries in the U.S. and abroad. The professional and national economic implications of cooperation of this kind and on this scale are among the most significant in the history of the profession.

This Institute is directed towards those who already have some experience and knowledge of the problems of automation and library management, particularly in the area of bibliographical services. Typically they will already be involved in systems design and operation in large libraries. It is for them that the MARC Project and its implications have the most direct relevance in their professional responsibilities.

The aim of the Institute is to broaden and deepen their understanding of the implications of automation for library planning in this area through an intensive, first-hand study of an already operational situation. The materials, working papers and operations of the MARC Project will be used together with the facilities of the University Computer Science Center; Working sessions will be held in the University's Fine Arts Building, Room NN-214 and Computer Science Center.

Members of the faculty of the School of Library and Information Services, MARC Project Staff of the Library of Congress and invited authorities in the field will present and discuss the operations and problems of the automation of bibliographical services.

From the Institute the participants will learn of and gain practical experience in the nature, aims and routines of the MARC Project; from that they will gain first-hand experience of the operational problems of automating bibliographical services; they will further examine the the rationale, problems and prospects of the automation of bibliographical services, and through discussion explore the principles that underlie automation. In particular they will relate their experience in the

Institute to the problems of the national and international bibliographical context.

This introduction could hardly end without a sincere expression of gratitude to the many people who helped to make this Institute possible: to the members of the staff of the Office of Education, to the Deans and faculties of the University of Maryland Computer Science Center and the School of Library and Information Services, and especially to the Librarian of Congress and his staff in the Information Systems Office, who have cooperated so willingly and so effectively to bring this Institute about.

David Batty
Director of the Institute

The University of Maryland at College Park reflects the pace of the rapidly expanding Baltimore - Washington megalopolis in which it is located. Since its origin as a medical college in 1807, the University has become a worldwide multi-campus complex and one of the largest overseas degree-granting institutes in the world. The mosaic of degree-granting schools at College Park is complemented by the University's colleges located on the Baltimore campus.

AT COLLEGE PARK

College of Agriculture
College of Arts and Sciences
College of Business and Public Administration
College of Education
College of Engineering, the Glenn L. Martin Institute of Technology
Agricultural and Home Economics Extension Service
Agricultural Services and Controls
College of Home Economics
Department of Air Science
College of Physical Education, Recreation and Health
University College (formerly College of Special and Continuation Studies)
Graduate School of University of Maryland
Summer School
Agricultural Experiment Station
Computer Science Center

AT BALTIMORE

School of Dentistry
School of Law
School of Medicine
School of Nursing
School of Pharmacy
School of Social Work
University Hospital
Psychiatric Institute

AT CATONSVILLE

University of Maryland Undergraduate Campus

The University's most important area of growth is one of the most difficult to assess: its contributions to the individuals within the society it must serve. To this end the University has required itself to provide an environment which integrates knowledge and the individual.

One of the direct results of the University's obligation has been the establishment of a Graduate School of Library and Information Services. Its purpose is to provide competent information specialists in library and information service.

By augmenting academic instruction with the technological and advanced engineering facilities on its campus, the University has incited a most contemporary outgrowth. The University's new high capacity cyclotron demonstrates a positive realization of the 20th Century. The incorporation of the Computer Science Center's highly complex machinery into the various curricula of the University's colleges further outlines the necessity of the University to establish the "lead in expanding the intellectual horizons and the scientific frontiers, thus helping mankind to go forward--always toward the promise of a better tomorrow."

* * *

STAFF

Director

David Batty, University of Maryland

Lecturers

Henriette D Avram, Library of Congress

Ritvars Bregzis, University of Toronto

Mary Lee Bundy, University of Maryland

Hillis L Griffin, Argonne National Laboratory

Kay D Guiles, Library of Congress

Laurence B Heilprin, University of Maryland

Jerry S Kidd, University of Maryland

John F Knapp, Library of Congress

Particia Parker, Library of Congress

Jean Michel Perreault, University of Alabama

Lucia S Rather, Library of Congress

Frederick Ruecking, Rice University, Texas

Louis A Schultheiss, University of Illinois, Chicago

Peter Simmons, Library of Congress

William J Studer, Library of Congress

Claude E Walston, University of Maryland

David L Weisbrod, Yale University

FULL PROGRAM

June 10
Monday

11:30 am — Registration
12:30 pm — Lunch
Welcome by Paul Wasserman, Dean of the School of Library and Information Services, University of Maryland
Introduction by David Batty, Director of the Institute
2:00 pm — Opening Address by Laurence B. Heilprin, University of Maryland

The opening session of the Institute will be devoted to a synopsis of the physical and human bases for mechanization, and it will focus upon the automation of library/information systems. The MARC system will be highlighted within this background; its characteristics will be identified and used to forecast its probable effect on the library/information systems of this country and of those abroad.

3:00 pm — Break for Coffee
3:15 pm — Context and origins of the MARC Project - Henriette D. Avram, Library of Congress

A discussion of the need for the development of an automated system for cataloguing and bibliographical services leads to a description, the early investigations, and experiments in the Library of Congress.

June 11
Tuesday

9:00 am — Machine characteristics - Claude E. Walston, IBM.

This session presents an overview of EDP systems with emphasis on those aspects that relate to MARC. The problems of preparing bibliographic data for machine consumption and retrieval are discussed in the light of general in-put/out-put devices. Attention is also given to the software necessary for these programs, to programming, program instructions and to the programs themselves.

10:15 am — Break for Coffee
10:45 am — Identification of data elements - Part I, by John F. Knapp and Patricia E. Parker, Library of Congress

The experiments, problems and solutions of the identification of the elements of entry and description are discussed with reference to the style and establishment of headings and the parts of the description. MARC I and MARC II are described and discussed to introduce examples of current practice.

June 11 continued	12:00 noon	Lunch
	2:00 pm	Identification of data elements - Part II, by John F. Knapp and Patricia E. Parker, Library of Congress
	3:15 pm	Break for Coffee
	3:45 pm	Seminar group briefing - Institute Staff
June 12 Wednesday	9:00 am	Identification of data elements - Part III, by John F. Knapp and Patricia E. Parker, Library of Congress
	10:15 am	Break for Coffee
	10:45 am	Identification of data elements - Part IV, by John F. Knapp and Patricia E. Parker, Library of Congress
	12:00 noon	Lunch
	2:00 pm	Style of data elements, by Lucia J. Rather, Library of Congress

This session concerns the problems of conventions of style in a MARC format: omissions, abbreviations, contractions; alphabets and transliteration. The use of conventional catalog codes is discussed in the context of descriptive style.

	3:15 pm	Break for Coffee
	3:45 pm	Seminar group meetings
June 13 Thursday	9:00 am	Laboratory session with in-put data sheets - Part I, Library of Congress Staff and Institute Staff.

Participants will have an opportunity for practical experience of the preparation of data for in-put to the machine.

	10:15 am	Break for Coffee
	10:45 am	Laboratory session with in-put data sheets - Part 2, Library of Congress Staff and Institute Staff
	12:00 noon	Lunch
	2:00 pm	Laboratory session with in-put data sheets - Part 3, Institute Staff
	3:15 pm	Break for Coffee
	3:45 pm	Seminar group meetings
June 14 Friday	9:00 am	Searching areas: Bibliographic Retrieval from unverified bibliographic in-put, by Frederick Kuecking, Rice University, Texas.

The Fondren Library at Rice University has utilized the MARC I data base in a series of experiments exploring various techniques of extracting bibliographic data from a large file using unverified data from order requests. Results indicate the need for a compressed title and main entry code which will permit record identification using a variable retrieval threshold generated by the data used as in-put. Analysis of English word-structure points to the use of multiple 4-character codes for title, main entry, and added entries.

June 14
continued

10:15 am — Break for coffee

10:45 am — Book-Oriented Selective Dissemination of Information; a Current Awareness Service for Faculty, by William J. Studer, Indiana University

Forty faculty in the social sciences stated their subject interests in natural language. These were translated into L.C. subject headings and class numbers and stored on punched cards. Computer programs matched Reformatted MARC entries against faculty interest profiles recorded card numbers for proper matches and printed pertinent citations (complete bibliographic entry) for each participant. Biweekly triplicate lists of entries were used for evaluation and return, readers own use and library recommending. Interviews were held before and after the experimental dissemination period. System development and operational procedures will be described, and faculty reactions and potentials of the service will be discussed.

12:00 noon — Lunch

2:00 pm — Searching areas: the organization of MARC for searching, by Henriette D. Avram, Library of Congress

3:15 pm — Break for Coffee

3:45 pm — Seminar group meetings

June 17
Monday

9:00 am — Use characteristics, by Jerry S. Kidd, University of Maryland

In order to understand the use characteristics of MARC, it is essential first to consider the actual functions of a conventional catalogue in terms of costs and utilities and from the standpoint of both the librarian and the patron. The distinctive attributes of MARC can then be examined for their exploitability with respect to improved services and/or heightened efficiency of search operations. A methodology for the developmental test and evaluation of MARC-type operations will be proposed and the implications of such formal feedback mechanisms on the design of components and the evolution of the total system will be analyzed.

June 17
continued

10:15 am Break for Coffee
10:45 am Cost models - Peter Simmons, Library of Congress

12:00 noon Lunch
2:00 pm Reactions and observations from a participating library, by David L. Weisbrod, Yale University.

MARC I was used intact at Yale for a new titles alerting service, and was adapted to a Yale format for the Yale Bibliographic System. The problems of file growth and file maintenance are discussed. First thoughts on MARC II concern the programmer's point of view, the implications for locally compatible original cataloguing and the local file cummulation problem.

3:15 pm Break for Coffee
3:45 pm Seminar group meetings

June 18
Tuesday

9:00 am All day laboratory session with computer facility (Computer Science Center) - Institute and Center Staff

Participants will observe and take part in demonstrations of sample programs currently in use in libraries cooperating in the MARC Project.

12:00 noon Lunch

June 19
Wednesday

9:00 am Discussion on machine characteristics and MARC format, moderated by Claude E. Walston, IBM.

The discussion will be based on Dr. Walston's earlier paper on Machine Characteristics and will involve participants' reactions to the all-day laboratory session at the Computer Science Center.

10:15 am Break for Coffee
10:45 am Discussion on use characteristics and MARC format, moderated by Jerry S. Kidd, University of Maryland

The discussion will be based on the earlier session in which

June 19
continued

Dr. Kidd discussed criteria and desiderata of machine systems, and will involve participants experience and observations on the demonstration at the Computer Science Center.

12:00 noon Lunch
2:00 pm The MARC network, by Hillis L. Griffin, Argonne National Laboratory, Illinois

This session concerns the nature of a MARC network both in this country and abroad; the part that the users would play in such a network; the likelihood for need on the part of the user for variation in the MARC information both from the standpoint of manipulation and internal file handling, and the implications of an idealized network for cooperation among and between libraries and the Library of Congress. The paper also describes some of the approaches to applications programming from the standpoint of out-put products and the problems encountered by 1401 and 360 users of MARC data.

3:15 pm Break for Coffee
3:45 pm Seminar group meetings

June 20
Thursday

9:00 am Automation and the whole library by Louis A. Schultheiss, University of Illinois (Chicago).

The availability of uniform machine readable data should promote new relationships between libraries. Standardization of catalog copy and cooperative use are two of the obvious advantages; among the disadvantages are the loss of the individual library's control over its own practice. Still other aspects are new interdepartmental relationships and new staffing and supervising patterns.

10:15 am Break for Coffee
10:45 am Social and political implications of automation by Mary Lee Bundy, University of Maryland

This session will attempt to put automation in a social and political context. Questions will be raised regarding resistance to automation and to centralized cataloguing; automation as a political strategy; automation as innovation or automation to re-inforce the status quo; effects of automation on internal relationships in the library; job security, educational implications; impact on the user in the conventional library. The central thesis is that the introduction of any technical change has an impact on the human beings and their organizational life which must be calculated and, secondly, that technological improvements cannot be viewed apart from the over-all aims of the organization and may indeed force a review of the realities of organizational objectives.

June 20
continued

12:00 noon Lunch
2:00 pm Cataloguing in the context of automation, by Ritvars Bregzis, University of Toronto

The future-oriented library will tend more and more toward providing effective access to information aided by modern technology. This trend emphasized the unity of information, both in its scope and its levels of specificity, and the powerful information handling capacity of computers will tend to handle all information as information regardless of the medium that carries it.

For bibliographic information practice this trend implies less dependence on the formalities of records and more on the natural characteristics of information element. New forms of bibliographic practice can be expected to emerge. 'Multi-entry' or 'no-entry' information units of various levels might use the bibliographic information found in title pages, contents listing or other sources in an authentic form.

3:15 pm Break for Coffee
3:45 pm Seminar group meetings

June 21
Friday

9:00 am Universal Bibliography; Random Reflections on its Natures and its History, by Jean M. Perreault, University of Alabama

Who have been those who have attempted to produce or to lay down the pattern for UB? Why have these products and suggestions not succeeded? What would be the use of UB, or, who would use it? What would have to be the internal structure of a successful UB? What would have to be the external embodiment of that structure? Do we have the means at hand to do successfully what has always failed?

10:15 am Break for Coffee
10:45 am Reports of seminar groups
12:00 noon Lunch
2:00 pm Plenary session - Institute Staff

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BIOGRAPHICAL NOTES

CHARLES DAVID BATTY, University of Maryland, Director of the Institute

His original discipline was music but after library experience in technical services, particularly in classification, Mr. Batty lectured at the Birmingham School of Librarianship on classification, cataloging and information retrieval. He has been Head of the Department of Information Retrieval Studies in the College of Librarianship Wales since its founding in 1964 and currently is the Visiting Lecturer in the School of Library and Information Services of the University of Maryland. His research has centered on the history of classification, the development of an experiential training model for documentation and the application of programmed instruction to library science. His recent publications include three programmed textbooks in the field of classification and the proceedings of two library automation conferences of which he was Director of Studies.

HENRIETTE D AVRAM, Library of Congress

After graduating from George Washington University, Mrs. Avram worked as a systems analyst in various government and industrial concerns. She has been very active in the field of automated library and information systems and is now Director of the MARC Project and Assistant Coordinator of the Library of Congress Information Systems Office.

RITVARS BREGZIS, University of Toronto

Mr. Bregzis holds degrees in medieval history and in library science from the University of Toronto as well as degrees from the University of Riga, Bonn and Köln. His professional concerns are bibliographic information control,

conversational information systems and information networks, and in his official capacity in charge of the Technical Services Departments of the University of Toronto Library and automation planning and implementation for the University of Toronto Library System he supervised the design and implementation of the ONULP computerized catalogue system.

MARY LEE BUNDY, University of Maryland

Dr. Bundy's broad area of interest is the social and political aspects of librarianship. She is a Professor in the School of Library and Information Services of the University of Maryland, associate director of the School's Manpower Research Project and one of the two directors of an experimental project in library service to the disadvantaged. In the recent past she has conducted empirical research related to public library development in several states, and her recent publications demonstrate her concern with the impact of automation on library services.

HILLIS L GRIFFIN, Argonne National Laboratories

Mr. Griffin holds degrees in sociology and library science from the University of Washington, and has taught there and at the University of Illinois and Rosary College, Illinois. His professional experience includes work in the Technical Library of the National Reactor Testing Station, Idaho Falls, and in the Library Services Department of the Argonne National Laboratory, where he is currently head of Technical Processing and Information Systems Libraries. His major responsibility is the development of computer-related systems for the whole library and currently is involved in the distribution of MARC tapes to MARC Project participants.

KAY D GUILES, Library of Congress

Mr. Guiles holds degrees in education from the University of Nebraska and in Library Science from the University of Michigan. After experience as a cataloger and research analyst in the Library of Congress and as Head of French Language Shared Cataloging, he became a Library Information Systems Specialist in the Information Systems Office.

LAURENCE B HEILPRIN, University of Maryland

Dr. Heilprin's main interest is in the application of physics, logic, applied mathematics, and psychology to human and machine communication. He has published extensively on such subjects as microforms, a mathematical model of a duplicating library and a theory of the copyrighted work as a message. Formerly staff physicist for the Council on Library Resources, Dr. Heilprin now holds a joint professorship in the School of Library and Information Services and the Computer Science Center of the University of Maryland. He is also a past president of the American Documentation Institute, now the American Society for Information Science, and a Director of the Committee to Investigate Copyright Problems.

JERRY S KIDD, University of Maryland

Dr. Kidd's principal interests are in the areas of individual and organizational performance, particularly as affected by communications procedures and information resources. He has done both laboratory and field research in support of the development of information and control systems. He is also concerned with the study of problems of research administration and the economics of scientific

enterprise. Dr. Kidd is currently a Visiting Professor in the School of Library and Information Services; before joining the Maryland faculty Dr. Kidd served with the National Science Foundation and earlier as a private research consultant

PATRICIA E PARKER, Library of Congress

Mrs. Parker holds degrees in music, education and library science from the University of California. After experience as a cataloguer in San Fernando State College and as the Librarian of Newport Harbour High School she worked in the Library of Congress in the Descriptive Cataloging Division before becoming MARC editing supervisor in the Information Systems Office.

JEAN M PERREAULT, University of Alabama

Mr. Perreault's background combines practical librarianship and philosophical study. He is primarily concerned with speculation about the linguistic structure of information languages, aimed at improvement of their search-strategic functions. One of his major interests has been the opportunity offered by [illegible] for bibliographical cooperation and he has contributed significantly to the literature in this area. Mr. Perreault served on the School of Library and Information Services faculty until his recent appointment as Director, University Library, University of Alabama, Huntsville.

LUCIA J RATHER, Library of Congress

Mrs. Rather graduated from the University of North Carolina with degrees in history and library science. Her experience includes work in Brooklyn Public Library and the Library of Congress. In 1966 she joined the Information

Systems Office as a Library Analyst and currently as a Library Information Systems Specialist. She is concerned with the design of a character set for MARC tapes.

FREDERICK RUECKING, Rice University

Holds degrees in anthropology from the University of texas and in library science from the University of Michigan. After experience in the libraries of the University of Michigan and Rice University, Texas, where he is currently Head of the Data Processing Division, where considerable experiment has been carried on with the MARC tapes.

LOUIS A SCHULTHEISS, University of Illinois (Chicago)

Holds degrees in history from the University of Wyoming and in library science from the University of Denver. His experience has been in senior posts in the university libraries of Denver and Illinois at Chicago, and since 1961 he has been concerned with technical processing; University of Illinois (Chicago); library information systems project - of which he is now the Director. He is the author of "Advanced Data Processing in the University Library".

PETER SIMMONS, Library of Congress

After an early career teaching English literature, Mr. Simmons took his M.S. (L.S.) from Pratt Institute, Brooklyn. Experience in the San Francisco State College Library and in the Library of Congress in various capacities led to his current position of Supervisor for the MARC production group and Research Analyst in the Information Systems Office.

WILLIAM J STUDER, Indiana University

Mr. Studer holds degrees in English literature and library science from Indiana University and has worked in the Reference Department of the Library of Congress. An interest in the potential of automated bibliographical systems for the selective dissemination of information led to his experimental work for a PhD degree in Indiana University.

CLAUDE E WALSTON, International Business Machines

Systems science - in particular, the areas of systems analysis, systems theory and system design--is Dr. Walston's chief interest. He has had a broad background in the design and implementation of data processing systems to a variety of applications. In recent years he has been responsible for the design of information storage and retrieval systems and real-time control systems. Dr. Walston is currently Systems Manager of Goddard Operations for the IBM Federal Systems Center and an Adjunct Lecturer in the School of Library and Information Services at the University of Maryland.

DAVID L WEISBROD, Yale University

Dr. Weisbrod holds a physics degree from Harvard University and a systems analysis degree from Rutgers University. His professional experience has included work in systems analysis in various capacities in System Development Corporation on the Strategic Air Command Control System, and in Yale University Library, where he is currently Head of the Development Department of the Research and Development facility of the University Library. His official responsibilities concern the development of a Machine-Aided Technical Processing System and the Yale Bibliographic System for bibliographic file maintenance and catalogue production.

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THE AUTOMATION OF BIBLIOGRAPHICAL SERVICES

10-21 JUNE 1968

SCHOOL OF LIBRARY AND
INFORMATION SERVICES
UNIVERSITY OF MARYLAND

Two of the most urgent issues facing librarians today are the sharing of effort in providing cooperative bibliographical services, and the use of automation and electronic data processing to handle the quantity and complexity of information and the information needs of society. Many libraries in the United States have already experimented with or have used EDP equipment, and in the next few years, under the increasing pressures of material and demand, many more must do the same. In order to oversee and design the whole scope of a library's technical and bibliographical services it is essential to have a thorough understanding of the nature, function, operation, problems and implications of automated bibliographical services and it is the intention of this Institute to provide an opportunity for a concentrated pragmatic experience in these areas.

The largest and most intensive exploration of the applications of EDP to library cataloging and bibliographical services at a level and in a context of national and even international significance is the MARC Project of the Library of Congress. It is a full scale experiment in and demonstration of the practicability of the computer preparation and use of Library of Congress catalog records, not only in the Library of Congress itself but also by cooperating libraries in the U S and abroad. The professional and national economic implications of cooperation of this kind and on this scale are among the most significant in the history of the profession.

This Institute is directed towards those who already have some experience and knowledge of the problems of automation and library management, particularly in the area of bibliographical services. Typically they will already be involved in systems design and operation in large libraries.

It is for them that the MARC Project and its implications have the most direct relevance in their professional responsibilities.

The aim of the Institute is to broaden and deepen their understanding of the implications of automation for library planning in this area through an intensive, first-hand study of an already operational situation.

From the Institute the participants will learn of and gain practical experience in the nature, aims and routines of the MARC Project; from that they will gain first-hand experience of the operational problems of automating bibliographical services; they will further examine the rationale, problems and prospects of the automation of bibliographical services, and through discussion explore the principles that underlie automation. In particular they will relate their experience in the Institute to the problems of the national and international bibliographical context.

The Institute will be conducted by the School of Library and Information Services of the University of Maryland.

From its inception the school has encouraged awareness of the techniques and problems of automation and the principles of scientific management and organization and has established a very strong program element of classification, information retrieval and cataloging.

The Director of the Institute will be David Batty, Head of the Department of Information Retrieval Studies in the College of Librarianship, Wales, at present Visiting Lecturer in the University of Maryland. Members of the faculty of the School of Library and Information Services, MARC project staff of the Library of Con-

gress and invited authorities in the field will present and discuss the operations and problems of the automation of bibliographical services. The materials, working papers and operations of the MARC Project will be used together with the facilities of the University Computer Science Center. Working sessions will be held in the University's School of Library and Information Services and Computer Science Center. Accommodation has been arranged in a nearby motel.

The Institute is supported by a grant from the Higher Education Act, Title II-B of the U. S. Office of Education. Attendance will be limited to 40 participants and the estimated individual cost is $250 plus travel, towards which participants will receive an award of $150.

Applications should be sent, no later than April 15, 1968, to:

David Batty
School of Library and Information Services
University of Maryland
College Park, Maryland 20742

WITH

LIBRARY OF CONGRESS - PROJECT MARC

AND

COMPUTER SCIENCE CENTER
UNIVERSITY OF MARYLAND

SUPPORTED BY

U S OFFICE OF EDUCATION

INSTITUTE ON

THE AUTOMATION OF BIBLIOGRAPHICAL SERVICES

DIRECTOR: DAVID BATTY

10-21 JUNE 1968

SCHOOL OF LIBRARY AND
INFORMATION SERVICES
UNIVERSITY OF MARYLAND

APPLICATION FORM *THE AUTOMATION OF BIBLIOGRAPHICAL SERVICES*

Name..... Position.....

Business Address.....

..... Telephone.....

Home Address..... Telephone.....

Educational Qualifications.....

Relevant Experience.....

.....

Please see over ➡

Mail to: David Batty, Director: Institute on the Automation of Bibliographical Services, School of Library and Information Services, University of Maryland, College Park, Maryland 20742.

Please outline your interest in the Institute.

Please check if you will want accommodation in the motel. ☐ YES ☐ NO

INSTITUTE PRELIMINARY READING LIST

ADKINSON, B.W. and STEARNS, C.M.
Libraries and machines -- a review. In American Documentation. 18.3 (July 1967) 121-124.

A brief presentation of the mechanization of bibliographical control processes, automation of search processes, and view of new kinds of services available through computer technology.

ALTMAN, BERTHOLD
The medium-sized information service; its automation for retrieval. Washington, D. C., Harry Diamond, 1963.

A theoretical discussion of the basic elements influencing the operation of a documentation office, with special reference to applications within large documentation centers.

BATTY, C.D. ed.
Libraries and machines today. Scunthorpe, North Midland Branch of the Library Association, 1967.

A review of workshop discussions on the present utilization and an analysis of future applications of computers in the library.

BREGZIS, RITVARS
ONULP -- an automated bibliographic data control system. In College and Research Libraries. 26:6 (November 1965) 495-508

A description and outline of not only complete bibliographic information produced by computer programming of detail elements but also computer "by-products" including analytical, cooperation, and other activities.

BRY, ILSE and AFFLERBACH, LOIS
Bibliographical challenges in the age of the computer. In Library Journal. 90:4 (February 15, 1965) 813-818.

A plea for accuracy in the automated age of bibliography is illustrated by comparisons of the inaccuracies found by past bibliographers.

BRYAN, HARRISON
American automation in action. In Library Journal. 92:2 (January 15, 1967) 189-196.

Presents a personal view of library automation in the United States through December 1965. Concludes that very much is said about library automation, much is written about computer utilization, but little is actually accomplished after the initial effort.

BUCKLAND, LAWRENCE F.
The recording of Library of Congress bibliographical data in machine form. Washington, D. C., Council of Library Resources, Inc., 1965.

Presents precise yet readable study of the growing need for automated library services; has step by step analysis of machine readable tape systems.

COX, N.S.M., DEWS, J.D., and DOLBY, J.L.
The computer and the library; the role of the computer in the organization and handling of information in libraries. Newcastle upon the Tyne, University Library Publications, 1966.

A comprehensive view of the role and function of the computer in the total concept of the library as an information retrieval service. Includes general bibliography on library automation.

DUNKIN, PAUL S.
Cataloging and CCS: 1957-1966. In Library Resources and Technical Services. 11:3 (Summer 1967) 267-288.

An historical essay on the Cataloging Classification Selection of the ALA's Resources and Technical Services division in relation to the plethora of developments in cataloging theory 1957-1966.

GEDDES, ANDREW
Library automation: an essential service. In American Library Association Bulletin. 61:6 (June 1967) 642-646.

An outline of proposals to close the gap between the needs of Library users and the resources of the public library.

GRIFFIN, HILLIS L.
Computer programming for library applications. In Southeastern Librarian. 25:3 (Fall 1965) 130-136.

A brief analogy of clerk to computer initiates a detailed description of actual examples for the translation of library information to the absolute language of the computer.

HAMMER, DONALD P.
Automated operations in a university library -- a summary. In College and Research Libraries. 26:1 (January 1965) 19-29.

The activities of a conventional library are scrutinized and re-evaluated in terms of a machine-based system with particular emphasis on machine utilization for routines of technical service and circulation.

KILGOUR, FREDERICK G.
Systems concepts and libraries. In College and Research Libraries. 28:3 (May 1967) 167-170.

Defines systems and outlines ideals of how to attain maximum utility through correlating extensive user studies with the library as a service center.

KOSTER, KURT
The use of computer in compiling national bibliographies. In Libri. 16:4 (1966) 269-281.

Examples for national bibliography are taken from the Deutsche Bibliographie to illustrate a step by step account of the production of a bibliography by computer.

MARKUSON, BARBARA EVANS ed.
Libraries and automation. Washington, D. C., Library of Congress, 1964.

Collected papers presented on several aspects of library automation. Includes computer usage in data processing and an automated bibliographic system with visions to the future use of a national system.

MEYERS, JAMES E.
Automation: what it is and what it is not. In Special Libraries. 46:7 (September 1955) 308-313, 353.

Illustrations taken from personal experiences focus attention on the economic and sociological impact of automation upon the citizenry.

SCHNEIDER, GEORG
Theory and history of bibliography, translated by Ralph R. Shaw. New York, Columbia University Press, 1934.

A history of bibliography delineates the nature and preparation of the bibliographic entry. Observations are based upon the theory that there can be no sharply defined types of bibliographic listings.

WHITE, HERBERT S.
To the barricades! The computers are coming! In Special Libraries. 57:9 (November 1966) 631-635.

Propounds that the computer should be utilized to improve the stature of the librarian; through the application of computer resources the librarian should be able to exert himself in a more positive role.

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THE AUTOMATION OF BIBLIOGRAPHICAL SERVICES INSTITUTE

BIBLIOGRAPHY

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Libraries and machines -- a review. In American Documentation. 18:3 (July 1967) 121-124.

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The Brasenose conference on the automation of libraries. London, Mansell, Ltd., 1966.

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Textbook on mechanized information retrieval. New York, John Wiley and Sons, Inc., 1962.

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Electronic information handling. Washington, D.C., Spartan Books, Inc., 1965.

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The librarian and the machine; observations on the application of machines in the administration of college and university libraries. Detroit, Gale, 1965.

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The medium-sized information service; its automation for retrieval. Washington, D.C., Harry Diamond, 1963.

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Analysis and automated handling of technical information at the nuclear safety information center. In American Documentation. 18:4 (October 1967) 235-241.

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How will electronic information systems affect cataloging rules? In Library Resources and Technical Services. 5:2 (Spring 1961) 135-139.

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The automatic ordering of replacement titles for libraries in Metropolitan Toronto. In Library Resources and Technical Services. 11:2 (Spring 1967) 215-220.

C Project: Machine Readable Catalog

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Fields of information on Library of Congress cards; analysis of a random sample, 1950-1964. In Library Quarterly. 37:2 (April 1967) 180-192.

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D Automated Bibliographical Item Selection

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Automatic preparation of book catalogs. American Library Association Bulletin. 58:8 (September 1964) 714-718.

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A book catalog for libraries--prepared by camera and computer. In Library Resources and Technical Services. 9:2 (Spring 1965) 205-206.

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F Computer Produced Catalogs -- Specific Applications

1 HEILIGER, EDWARD
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The total systems concept, how to go beyond the hardware dimension in its definition. Paper prepared for the School of Library and Information Services, University of Maryland, 1968.

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On retrieval system theory. London, Butterworths, 1965.

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Cataloging theory and practice. London, Asia Publishing House, 1965.

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Introduction

Within the MARC System the final step in the preparation of bibliographic data for mechanized processing is the conversion of the data into punched paper tape form. With the exception of diacritics and special characters not available on the Dura keyboard, instructions for which have been omitted, this document describes the typing procedures designed to effect this conversion.

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D. Verification Phase

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THE MARC SYSTEM DURA TYPING PROCEDURES

General Typing Procedures

The Dura typist will receive data to be punched in one of two forms, a MARC worksheet or an edited machine listing. Regardless of the form of input the same typing procedures are in effect. Usually all new records to be input to the MARC System will be in worksheet form. Corrections to, and verifications of previously new records will be in the form of edited machine listings. Below are treated the general typing procedures for all types of records. Following the general procedures individual procedures are detailed.

These typing procedures apply to all phases of Dura-typing. The format, however, may differ slightly depending on the material to be punched.

A. Each record must begin with a Start-of-Record indicator and end with an End-of-Record indicator. This is accomplished by typing three or more carriage returns ($^{C}_{R}$) in succession for each SOR or EOR required.

B. Each variable length field begins with a three digit identifying tag at the left margin, followed by an End-of-Block indicator, followed by a variable length data block, followed by an End-of-Block indicator. (The variable field with fixed length data blocks varies slightly from this pattern and will be discussed under "C" below).

1. An End-of-Block (EOB) may be indicated by a single tab ($^{T}A_{B}$) or a carriage return <u>not</u> followed by a tab.

2. If the data occupies more than one line, the carriage return is followed by a tab on the next line and the data is continued. The tag is not repeated.

3. If a tag is to be repeated a "tag site" (1-99, separated from the tag by a slash) is punched. Thus if the tag 6ØØ is repeated, 6ØØ/2 would be punched on the first repeat, 6ØØ/3 on the second and so on.

   Note: Tag site 1 is implicit.

4. If a word must be split at the end of a line it is necessary to hyphenate it. The computer programs will delete the hyphen and compress the segments to form a single word. If the hyphen of a word-group requiring one falls at the end of a line an extra hyphen must be added.

5. The data fields may be punched in any order, however, the L.C. card number (tag 94Ø) should always be first. It serves as the identifying number for the record. (Figure 1)

6. Typing errors may be corrected by one of the following methods.

   a. Deletions may be made character by character by simply backspacing ($^{B}K_{S}$) once for each character, space or tab you wish to delete. After the desired deletions are made the carriage can be turned up and the correct copy punched.

b. Deletions may be made word by word (anything between one letter space and the next) by pressing the delete key ($^{D}E_{L}$) once for each word deleted. The carriage then may be turned up and the correct copy punched.

c. An entire field can be deleted in one of two ways.

1. Using the first method, the delete key is pressed once; then the carriage return and a new field begun on the following line. This method is desirable if the tag has been punched incorrectly.

2. Using the second method, the same field is simply repeated on the next line. Punching a field for the second time eliminates the first version <u>if the tag and tag site numbers are identical.</u>

Note: Once the data EOB (^{C}R not followed by a $^{T}A_{B}$) has been typed and the next tag block begun, the data preceeding the ^{C}R can be deleted and corrected only by punching the same field a second time. This can be done anytime <u>before</u> the End-of-Record indicator is typed.

(Figure 2)

C. The tag ØØØ identifies all of the fixed length data blocks. The ØØØ field is treated as one variable length field containing a varying number of fixed length data blocks. Each fixed length block is further identified by a number followed by a period (1.-18.). Each retains the same identifying number on all records.

In this example the data in blocks 1. and 16. were originally mispunched, and the data in 1Ø. should have been left out.

D. In each of the four rows of keys on the Dura keyboard, the last character key at the right is a non-spacing key. Since these keys are all used exclusively for diacritics, it is necessary to punch each of these diacritics before the character with which it is to appear.

E. It is important to remember that all proofing, corrections and additions must be completed before the three carriage returns indicating the End-of-Record are pressed; nothing additional may be typed for that record after the End-of-Record has been indicated.

F. During any phase of Dura typing, after a record has been punched, proofed and corrected, the three carriage returns indicating the End-of-Record are inserted and the next record begun.

It is possible to intermix new records, corrections and verifications as long as the work sheets are kept in the same order as they are punched.

If there is no data for a particular block, it is left blank and is not punched onto paper tape. Thus, any combination of the numbered blocks may appear on a MARC record.

1. Each data block must have an End-of-Block indicator immediately following it. The spaces between the tag and each block are done with the tab key, not the space bar.

2. If the fixed length data blocks continue beyond a single line, the carriage return is pressed, then the tab, and typing is continued.

Example of Fixed Length Blocks for One Record:

ØØØ $^{T}A_{B}$ 1.a$^{T}A_{B}$ 3.x$^{T}A_{B}$ 4.x$^{T}A_{B}$ 1Ø.s$^{T}A_{B}$ 11.eng$^{T}A_{B}$ 13.r^{C}R

$^{T}A_{B}$ 16.swup$^{T}A_{B}$ 17.xxxx$^{T}A_{B}$ 18.25^{C}R

3. Deletions and corrections to the fixed length blocks may be made character by character as explained in 6a above, or by simply repunching the fixed block number with the correct information. If a fixed length data block is included that should have been left out, retype the number of the block and follow with a tab.

Example of Corrections to the Fixed Length Data Blocks for One Record:

ØØØ 1.a 1.b 1Ø.s 11.eng 13.s 14.1961

16.dcaw wa 17.xxxx 18.23 1Ø.

Initial Typing Phase

The Dura typist receives edited worksheets, each to be punched as a single MARC record. In worksheet form a record includes a photocopy of a completed L.C. manuscript card with the appropriate identifying tags entered, and several preprinted boxes with descriptive information codes added. The data is punched onto paper tape record by record. The data punched also appears as Dura hard copy enabling the typist to read it for correction purposes.

In its punched form, the information from the L.C. manuscript card consists of a number of variable length fields. The number of variable length fields per record varies depending on the total record length. Each variable length field consists of one tag block and a variable length data block. The data from the preprinted boxes appear in fixed length data blocks per record varies.

Note: In any given MARC record every variable length field has an identifying tag.

(Figure 4)

2. In some instances a record must go through the correction process more than once. This record will have a "correction sequence" number following the 94Ø tag action indicator. Example: 94Ø/C/2. (The sequence number 1 is implicit if no number appears.)

3. In addition to the 94Ø field, only those fields to be corrected, added, or deleted need to be punched. The typist punches the action indicators immediately after each tag.

Example of a correction record:

94Ø/C 61-Ø6Ø84Ø

6ØØ/A Bibliography: p. 6.

7ØØ/D

ØØØ/C 14.1961

C. To delete a complete record only 94Ø/D and the record number need to be punched.

Example: 94Ø/D $^{T}A_{B}$ 62-13124 $^{C}R.$

If more than one record is to be deleted the 94Ø/D tag need be punched only once followed by the record numbers punched one after another separated by tabs.

Example: 94Ø/D$^{T}A_{B}$62-13124 $^{T}A_{B}$ 64-8616 $^{T}A_{B}$ 64-8443^{C}R

The group of record numbers is treated as one tagged field between Start-of-Record, End-of-Record indicators.

Correction and Deletion Phase

The data punched on the paper tape during the initial typing phase is printed out in a Diagnostic Listing which is proofed and corrected by the editors. The Dura typist receives the Diagnostic Listing with the corrections indicated on it.

Record Corrections and Deletions

A. Each correction record must begin and end with a Start-of-Record, End-of-Record indicator C_R C_R C_R .

B. Each correction record has as its first variable length field, 940/$C^T A_B$ L.C. card number ^{C}R. The action indicator following the tag shows that at least one correction must be made to a field within this record.

Note: The card number serves as the record number and links the corrections to the record in the MARC System.

1. The corrections to be made are indicated at the individual tag blocks by three types of action codes.

   a. A: indicates the field is being added to the record.
   Example: 600/$A^T A_B$ D a t a ^{C}R

   b. C: indicates the field is being corrected.
   Example: 700/$C^T A_B$ C o r r e c t D a t a ^{C}R

   c. D: indicates the field is to be deleted from the record. In this case only the tag and action indicator need to be punched.
   Example: 831/$D^{C}R$

Verification Phase

The data punched during the correction phase must also be proofed by the editors. When a record is determined correct, its identifying tag with the action indicator "V" and the card number are sent to the Dura typist.

Except for the different action indicators, the punching procedures for verifications are identical to those for deleting an entire record.

Example: 94Ø/V$^{T}A_{B}$ 61-6Ø84Ø^{C}R

$^{T}A_{B}$ 64-481Ø3^{C}R

Example: 94Ø/V$^{T}A_{B}$ 61-6Ø84Ø$^{T}A_{B}$ 55-3Ø733^{C}R

Each record or group of records to be verified are treated as one record, beginning and ending with SOR-EOR indicators.

DURA-TYPING FORMAT (Only Data from the LC Card is Included)

```
C C C                (SOR)
 R R R
   T
94/ A                61-60840 C R
     B
   T
100 A                U.S.#Congress. House. Committee on Education and Labor. C R
     B
   T
200 A                Amendments to the Longshoremen's and harbor workers' compensation act.# C R
     B
   T                 Hearings before the Select Subcommittee on Labor of the Committee on Education C R
    A
     B
   T                 and Labor, House of Representatives, Eighty-seventh Congress, first session, C R
    A
     B
   T                 on H. R. 1258, a bill... Hearing held in Washington, D. C., February 21, 1961. C R
    A
     B
   T
300 A                Washington,# U.S. Govt. Print. Off.,# 1961.# C R
     B
   T
400 A                iii, 6 p. 23 cm. C R
     B
   T
700 A                Workmen's compensation--U.S. C R
     B
     T
700/2 A              Longshoremen--U.S. C R
       B
C C C                (EOR)
 R R R
```

Figure 1

DURA-TYPING FORMAT WITH CORRECTED ERRORS (Only Data from the LC Card is Included)

Figure 2

940 61-60840

100 U.S.# Congress. J($^{BK}_{S}$)
House. Committee on Education and Labor. (1)

200 Amendments to the Longshoremen's and Ha ($^{BK}_{S}$) ($^{BK}_{S}$) (1)
harbor workers' compensation act.# Hearings before
the Select Subcommittee on Labor of the Committee on Education and Labor, House of
Representatives, Eighty-seventh Congress, first session, on H. R. 1258, a bill
... Hearing held on ($^{DE}_{L}$) (2)
in Washington, D. C.,#($^{BK}_{S}$) (1)
February 21, 1961

301 ($^{DE}_{L}$ $^{C}_{R}$) (3)

300 Washington,# U.S. Govy ($^{BK}_{S}$)
t. Print. Off.,# 1961.$ ($^{BK}_{S}$) (1)
#

400 iii, 6 p. 23 cm.

700 iii, ($^{C}_{R}$) (4)

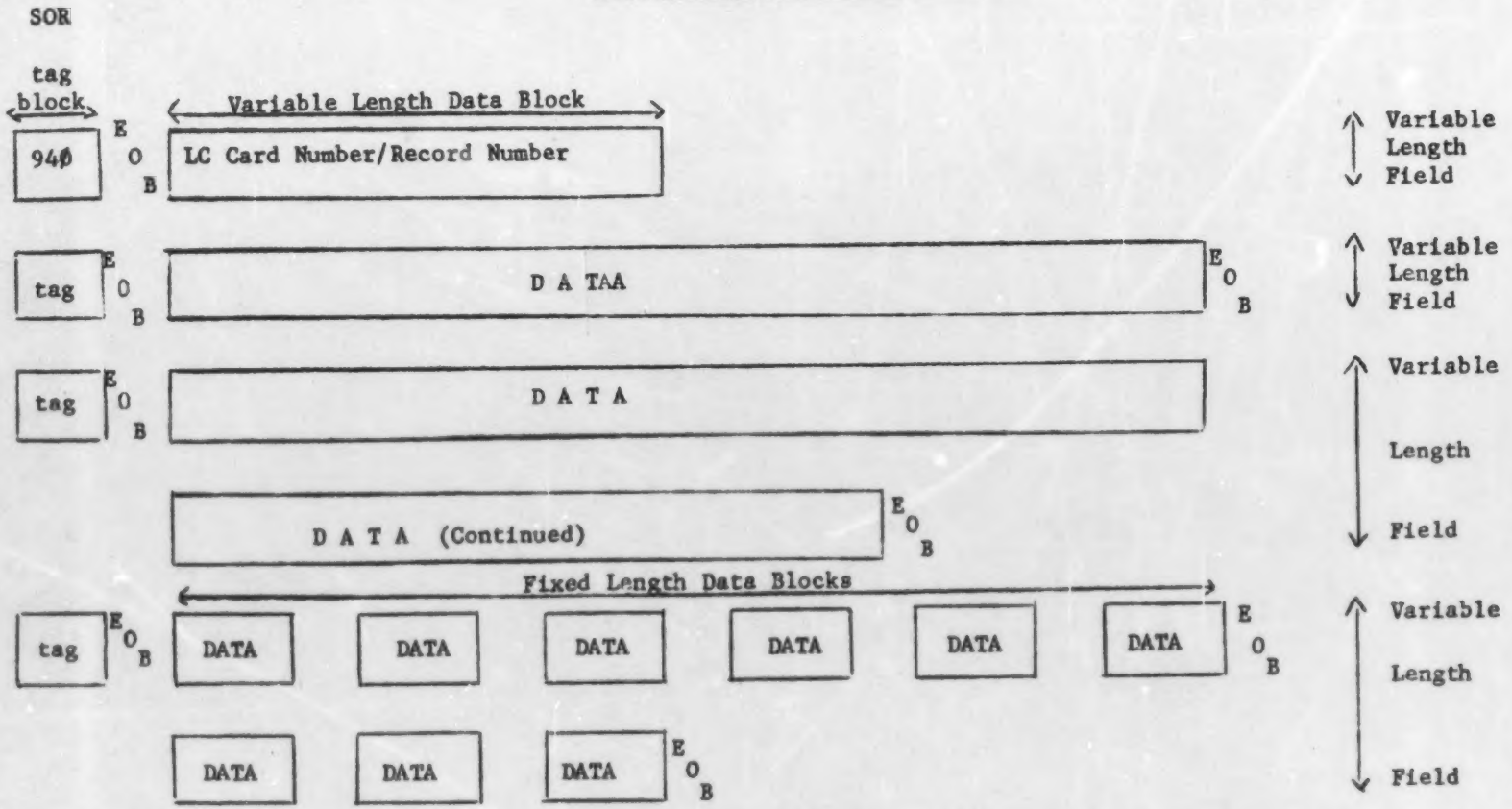
700 Workmen's compensation--U.S.

7002 Longshoremen--U.S.

(1) Example of deletion by character by character
(2) Example of deletion word by word
(3) Example of deletion when the wrong tag has been punched
(4) Example of the same field repeated. The first version will be eliminated.

Figure 4

BASIC CONFIGURATION OF A RECORD



Edited by:

MARC PILOT PROJECT
INPUT WORK SHEET

Appendix B

Description	Tag
Main Entry	100
Filing Title	150
Statements	
Title	200
Edition	250
Imprint	300
Collation	400
Notes	
Series-Add	500
Series-No	510
Notes	600
Tracings	
Subject	700
Pers Auth	710
Corp Auth:	
Govt Body	72B
Soc or Inst	72C
Relig Body	72D
Miscell	72E
Uniform	730
Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

MARC

BS2515
.H3

Haughton, Rosemary.
Saint Peter; pictures by Joanna Ross. London, Burns & Oates, 1967.

[22]p. col.illus. 15½cm. (Rosemary books; ~~no.~~ 1) 3/-

~~For children.~~

(B67-26300)

7.12.67 939

225.92 Peter, Saint, Apostle DO NOT SET

1. Peter, Saint, Apostle—Juvenile literature.

j92

68- 96060

LN Library of Congress 2

FIXED FIELD INPUTS:

TAG 000

Type of Entry	Form of Work	Biblio	Illus	Map	Supp No.	Conf or Meet	Juvenile
1	2	3	4	5	6	7	8

Language Data

Class	Lang. 1	Lang. 2
10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
13	14	15	16	17	18

Edited By:

LIBRARY OF CONGRESS
Information Systems Office
PROJECT MARC
INPUT WORKSHEET

Description	Tag
Main Entry	100
Filing Title	150
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Edition	250
Imprint	300
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Series-No	510
Notes	600
Tracings	
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LC Call No	900
DDC No	920
LC Card No	940

TL 540
.W7G55

MARC

Glines, Carroll V 1920-
The Wright brothers, pioneers of power flight, by Carroll V. Glines. New York, F. Watts [1968]

112 p. illus., port. 22 cm.

(Immortals of science) .

Bibliography: p. 109.

DO NOT SET

1. Wright, Orville, 1871-1948 -- Juvenile literature.
2. Wright, Wilbur, 1867-1912 -- Juvenile literature

I. Title.

	629.13/00922	68-10635
Library of Congress		

FIXED FIELD INPUTS:

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Language Data

Class	Lang. 1	Lang. 2
10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
13	14	15	16	17	18

11-19 (rev 7/67)

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INPUT WORKSHEET

Description	Tag
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Filing Title	150
Statements	
Title	200
Edition	250
Imprint	300
Collation	400
Notes:	
Series-Add	500
Series-No	510
Notes	600
Tracings	
Subject	700
Pers Auth	710
Corp Auth:	
Govt Body	72B
Soc or Inst	72C
Relig Body	72D
Miscell	72E
Uniform	730
Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

UF535
.C2A54
1967

MARC

Canada. Dept. of Defence Production.
Canadian defence products. 2d ed., abridged. Ottawa, Queen's Printer, 1967.

248 p. illus., maps. 25 cm. unpriced

(C***)

Extract of the illustrated section of Canadian defence products issued by the Industry Directory Section of the Canadian Department of Defence Production.

DO NOT SET

1. Munitions--Canada.

I. Canada. Dept. of Defence Production. Industry Directory Section. Canadian Defence products.
II. Title.

355.8/2/0971 | 68-72304

Library of Congress

FIXED FIELD INPUTS:

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Language Data

Class	Lang. 1	Lang. 2
10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
13	14	15	16	17	18

11-19 (rev 7/67)

3

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Information Systems Office
PROJECT MARC
INPUT WORKSHEET

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Title	200
Edition	250
Imprint	300
Collation	400
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Series-No	510
Notes	600
Tracings	
Subject	700
Pers Auth	710
Corp Auth:	
Govt Body	72B
Soc or Inst	72C
Relig Body	72D
Miscell	72E
Uniform	730
Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBM (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

HT 1327
.S8
1967

MARC

Sulivan, George Lydiard
Dhow chasing in Zanzibar waters and on the eastern coast of Africa: narrative of five years' experiences in the suppression of the slave trade, by Captain G.L. Sulivan; with a biographical introduction by Donald H. Simpson. [1st ed.] reprinted with intriduction. London, Dawsons of Pall Mall, 1967.

xxxi, 453 p. front., illus., plates (incl. col. map). 22 1/2 cm. (Colonial

DO NOT SET

history series) £7 (B67-24478)

Originally published, London, 1873.

1. Slave trade--Africa, East.

I. Title.

	380.1/44/0967	68-75391
Library of Congress		

FIXED FIELD INPUTS:

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Language Data

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10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
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11-19 (rev 7/67)

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LIBRARY OF CONGRESS
Information Systems Office
PROJECT MARC
INPUT WORKSHEET

Description	Tag
Main Entry	100
Filing Title	150
Statements	
Title	200
Edition	250
Imprint	300
Collation	400
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Tracings	
Subject	700
Pers Auth	710
Corp Auth:	
Govt Body	72B
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Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

TK7874
.S9
1967

MARC

Symposium on Hybrid Microelectronics, 2d, Boston, 1967.
The Second Symposium on Hybrid Microelectronics. Editors: John M. Woulbroun ,and, George A. Doyle. ,Palo Alto, International Society for Hybrid Microelectronics;,obtained from Western Periodicals Co., North Hollywood, Calif., 1967,

vii, 181 p. illus. 28 cm.
Papers and abstracts of the symposium

DO NOT SET

co-sponsored by the Boston Chapter of the IEEE Parts, Material and Packaging Group, and the International Society for Hybrid Microelectronics.
Includes bibliographies.
1. Microelectronics -- Addresses, essays, lectures.
I. Woulbroun, John M., ed.
II. Doyle, George A., ed.
III. Institute of Electrical and Electronics Engineers. Parts, Material and Packaging Group. Boston Chapter.
IV. International Society for Hybrid Microelectronics.

621.3817 | 68-2192

Library of Congress

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Language Data

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0	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
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1-19 (rev 7/67)

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INPUT WORKSHEET

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Relig Body	72D
Miscell	72E
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Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

DU 120
.A8
no. 9

MARC

Craig, Beryl F
Cape York, compiled by Beryl F. Craig. Canberra, Australian Institute of Aboriginal Studies, 1967.

viii, 233 p. maps (part fold.) 26 cm. (Australian Institute of Aboriginal Studies. Occasional papers in aboriginal studies, no. 9. Bibliography series no. 2) Unpriced

(Aus 67-1120)

DO NOT SET

1. Ethnology -- Australia -- Cape York Peninsula -- Bibl.
I. Title.
(Series: Australian Institute of Aboriginal Studies, Canberra. Occasional papers in aboriginal studies, no. 9.
Series: Australian Institute of Aboriginal Studies, Canberra. Bibliography series, no. 2)

	016.5729/94/3	68-74771
Library of Congress		

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Language Data

Class	Lang. 1	Lang. 2
10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
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11-19 (rev 7/67)

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Information Systems Office
PROJECT MARC
INPUT WORKSHEET

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Notes	600
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Pers Auth	710
Corp Auth:	
Govt Body	72B
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Relig Body	72D
Miscell	72E
Uniform	730
Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

B809
.8
.P4813

MARC

Planty-Bonjour, Guy
The categories of dialectical materialism. Contemporary Soviet ontology. [Translated by T. J. Blakely] Dordrecht, D. Reidel, 1967.

vi, 186 p. 22 cm. (Sovietica. Monographs of the Institute of East-European Studies. University of Fribourg/Switzerland) fl 30.-

Translation of Les catégories du matérialisme dialectique.
Bibliography: p. 173-180. (Ne 67-44)

1. Dialectical materialism, Categories of.

I. Title.
(Series: Sovietica; Abhandlungen)

DO NOT SET

	146/.3	68-70691
Library of Congress		

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Language Data

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11-19 (rev 7/67)

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Information Systems Office
PROJECT MARC
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Soc or Inst	72C
Relig Body	72D
Miscell	72E
Uniform	730
Title	740
Series	750
Copy Stmt	800
Nat Bib No	830
NBN (over 15)	831
LC Call No	900
DDC No	920
LC Card No	940

Filing Title: Les catégories du matérialisme dialectique.

Eng.

Cataloger's Notes	Initials	Date
✓ Cds.		
✓ Series		
Descriptive Cataloger	FIE	28 DEC 67
Reviser	LHH	5 JAN 68
Subject Cataloger	FW	JAN 9, 68
Reviser		
Shelflister	TG	10 Jan 68
Decimal Classification	EdJ	1-11-68
To P. O.		JAN 12 1968

Class. x-ref.

Cat. x-ref.

64-1 (rev 10/61)

FIXED FIELD INPUTS:

	Type of Entry	Form of Work	Biblio	Illus	Map	Supp No.	Conf or Meet	Juvenile
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Language Data

Class	Lang. 1	Lang. 2
10	11	12

Publication Data

Key	Date 1	Date 2	Place	Name	Height
13	14	15	16	17	18

11-19 (rev 7/67)

SEMINAR GROUP TOPICS

GROUP 1

You work in the library of a medium to large university of 20,000 students. There is a flourishing graduate school and considerable research in many fields, particularly in science and technology. Your library has decided to use MARC tapes as a part of a general automation of the library.

What operations would you include in the totally automated system and how could the MARC data be used in them?

* * *

SEMINAR GROUP TOPICS

GROUP 2

You work in the library of a medium to large university of 20,000 students. There is a flourishing graduate school and considerable research in many fields, particularly in science and technology. Your library has decided to use MARC tapes as a part of a general automation of the library.

How far and in what ways do you think the MARC tapes can be used for special applications in special departments or contexts.

* * *

SEMINAR GROUP TOPICS

GROUP 3

You work in the library of a medium to large university of 20,000 students. There is a flourishing graduate school and considerable research in many fields, particularly in science and technology. Your library has decided to use MARC tapes as a part of a general automation of the library.

What administrative redisposition of departments and their work do you think you will need to make?

* * *

SEMINAR GROUP TOPICS

GROUP 4

You work in the library of a medium to large university of 20,000 students. There is a flourishing graduate school and considerable research in many fields, particularly in science and technology. Your library has decided to use MARC tapes as a part of a general automation of the library.

What personnel problems do you anticipate (of conflict, resistance, regrading, etc.) and how do you intend to handle them?

* * *

SEMINAR GROUP TOPICS

GROUP 5

You work in the library of a medium to large university of 20,000 students. There is a flourishing graduate school and considerable research in many fields, particularly in science and technology. Your library has decided to use MARC tapes as part of a general automation of the library.

You are disappointed with the MARC format and you have decided to improve on it in an underground version of your own (CRAM) that will be distributed secretly to libraries all over the country.

What is the new format?

* * *

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Institute on the Automation of Bibliographical Services
June 10-21, 1968

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